SOME SOCIAL ASPECTS OF OVERHEAD COSTS

An Application of Overhead Cost to Social Accounting, with Special Reference to the Business Cycle

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Let me hasten to say that I am not solving the whole problem of social accounting, and I have no yardstick for all the ultimate social values. I have tried not to push my study farther than the tools I use will legitimately carry it. One of these tools is the simple device of canceling out payments from one industry to another and viewing costs as they would be if all industry were operated by one corporation. In other words, it is merely an extension of what the Interstate Commerce Commission does for the railroads when it reports their earnings, expenses, and capitalization "as one system." This is a very limited sort of social accounting. Other tools and other canceling devices will carry us farther.

Most important of these other tools is the notion of "differential costs," meaning the entire difference in costs resulting from a given difference in output. Wherever the sum of the differential costs is less than the whole cost of the business, there will be something left over, and for this the best name seems to be "residual cost." This is one aspect or variety of "overhead cost," and for most purposes the most significant and fundamental, but also the hardest to capture and measure. A rough approximation to it is furnished by dividing expenses into two parts, one of which is assumed to vary in proportion to business ("variable cost") and the other is assumed to be "constant." As ordinarily used, variable costs are a fairly good index of differential costs of short-run changes in business, moderate in amount and within the limits which existing plants can handle. However, a formula that would be accurate for this problem would necessarily be inaccurate for any other. In a broader sense wherever we find "residual costs" or "constant costs," this means that there is unused capacity somewhere, though it need not be in the physical plant, and is quite as likely to be in the labor that works it. The study of "overhead costs" may be regarded as primarily a study of unused capacity.

Differential cost has two very interesting characteristics. In the first place, since it is entirely a matter of comparing alternatives, the result depends as much on one alternative as on the other. You do not know what the differential cost of operating your plant is unless you know what the alternative is, in fact, it may be two or three things at once. The differential cost of increasing the output of a going plant will be one thing. The differential cost of shifting from one variety of

product to another will be a different thing, and the differential cost of keeping the plant in operation, rather than shutting down entirely, will be different from either of the other two. More broadly, if it is a question of people making automobiles or making sewing-machines, the earnings of one occupation consitute a differential cost of the other, and, so far as labor goes, this may be represented by the "going rate" of wages. But if it is a question of making automobiles or going idle, the differential labor cost of making automobiles is practically zero: going rates of wages have little or nothing to do with it. This characteristic of differential cost is the key of the argument that is to follow.

In the second place, "differential cost" means that we compare costs under two different sets of conditions, and *cancel out the common items.* But because these items cancel, it follows that *we do not even need to measure them,* if we can be sure that they really are common items. It is this fact which makes it possible for a would-be scientist to say a few things—a very few things—about the ultimate human costs of industry. No one can measure them, but this is not necessary in order to be able to say that under certain circumstances, they are constant. Granted this much, one can establish some very significant propositions in the field of social accounting.

So much for the tools which this argument is to use. The argument itself falls into seven theses, which may be condensed as follows:

I. While increased output in general may or may not bring economy, "off-peak" business nearly always does; its "differential cost" is extremely low, and an increase in this class of business brings substantially no increase in interest, depreciation, and many expenses of operation.

II. Efficiency requires putting any "idle overhead" (unused capacity) to work, whenever the product is worth its differential or variable cost.

III. The apparent volume of variable costs in industry is deceptive, on account of what may be called the "shifting and conversion of overhead costs." The cost of steel to the purchaser is a "variable charge" of so much per ton, but the cost of producing the same steel may be largely constant, regardless of output. This is a typical case. The process may be reversed, and variable costs may be converted into constant, though far less frequently. In either case the discrepancy between real and apparent costs may give rise to waste.

IV. The amount and behavior of overhead costs borne by any one business depends on the kind of contracts it makes in buying and selling, and therefore is "a matter of human institution," alterable by agreement and subject to control.

V. Most of the costs of industry are constant, with reference to the

business cycle. Where the alternative is idleness, the differential costs properly chargeable to additional output are next to nothing.

VI. There are some costs and damages which industry is not required to compensate at all, and a complete social accounting must include these as a form of "unabsorbed burden." The amount of this burden is to some extent subject to control by the community, which has it in its power to improve the allocation of its overhead costs.

VII. In the interests of collective efficiency, the costs of industry should be laid, either upon those responsible, or upon whatever persons and in whatever ways may best serve as incentives to economize those costs and utilize to the utmost the potential values resulting. This calls for important changes in the customary forms of financial obligations.

So much for the sketch of the argument; it remains to fill in this frame work, so far as time permits. The first thesis stresses the peculiar importance of fluctuations of output, and deals with "peak loads," "off-peak business," "load factors," and the like.[1] During short-time ups and downs, many costs are constant which are not constant for any other kind of business movement. For example, there is a very definite seasonal "peak" in railroad freight traffic, the maximum coming in October, and the minimum around January in most parts of the country. At any time except October the railroads ordinarily have spare capacity. Superimposed on this there is the "business cycle," and if a given October comes in a time of depression, there will be spare capacity even in October; in short, there is spare capacity a great part of the time. Any business coming at off-seasons, and only at off-seasons, will get the benefit of unused capacity and will show a very great economy. A careful comparison of the Interstate Commerce Commission's monthly figures of earnings and expenses for the railroads of the country yields the conclusion that, with reference to monthly fluctuations of traffic, about half the operating expenses (and, of course, substantially all the capital charges) are independent of traffic.[2] If the yearly trend is observed, however, it shows that operating expenses have been increasing faster than traffic during the last ten years. Allowing roughly for the shrinking dollar, it is still clear that the economy of increased traffic shown in the yearly trend is not nearly so great as that shown in the monthly fluctuations.

Thus the commonly accepted view as to the proportion of constant

[1]See G. P. Watkins: "A Third Factor in the Variation of Productivity," *Amer. Econ. Review*, V, 753. In this stimulating article Mr. Watkins discusses labor's load factor (pp. 770-77), furnishing many suggestions which are here followed out in treating labor as an overhead cost.

[2]The writer is hoping to publish the results of this study at an early date, but feels the need of supplementing the figures with physical data, independent of the shifting value of the dollar. This result corroborates Ripley's conclusions (*Railroads: Rates and Regulations*, chap. II) *so far as monthly fluctuations are concerned.*

expenses appears to be corroborated for monthly fluctuations, but not for yearly movements. For yearly movements, the proportion of constant costs would be much smaller, while for daily ups and downs it would be much larger. One chief reason for the discrepancy is that yearly growth calls for increased capacity.

But, as we have seen, in any given month, a railroad commonly has some unused capacity. As a result, railroad men have formed a habit of thinking of added business as always a gain, and so it is, in the short run, if the railroad can handle it at all. But if we take on added business without being careful to see that it is confined to the off-season, then some day when business is prosperous and the October "peak" requires more equipment, tracks, and terminal facilities, the economy will not be so great; in fact, it may have disappeared entirely. If the railroad then keeps its plant up to the demands of the traffic, it will have just as much unused capacity as before, and the added traffic which it took on at extra low rates *on account of having unused capacity, will not have resulted in any better utilization of its plant than before.* On the other hand, seasonal rates on coal, in order to stimulate movement in the spring and early summer, might improve the capacity factor of the railroads enormously, and actually save them from the necessity of making some enlargements of their plant which they otherwise might have to make.[3]

So much for the first thesis. The second says: "Utilize the idle overhead." To this end, anything that is worth its "differential cost" is worth producing. Here, however, we run into a dilemma, since "overhead costs" must be covered somehow, otherwise competition would degenerate into cutthroat warfare, and would quickly disappear. However, cutting prices is not the only way of securing additional off-peak business. It may also be done by producing "to stock," by scheduling postponable work to be done at such times, by special selling efforts, by taking on side lines, or by dovetailing together profitable lines of business, and bearing the expense involved in dividing one's attention and in shifting labor from one kind of work to the other.

The third thesis, still more important, deals with what I have called the "shifting and conversion of overhead costs." Whenever anybody who has any "overhead costs" sells his product or his services he puts the "overhead costs" into the price he charges and thus they nearly always become a "variable cost" to the purchaser. Thus most of the "constant costs" of business disappear as constant costs and are converted into "direct" or "variable costs," from which fact we may conclude that there is a great deal more "overhead cost" in business than is evident at first sight.

Telephone rates furnish a good example of this shifting and con-

[3] This would of course require careful study of sectional conditions.

version. A telephone company has some expenses that do not vary with number of calls and some that do. If it charges so much per call, it converts its "constant costs" into a "variable charge" on the consumer; and, as a result, the cost of added calls to him is more than it is to the company, and he may be deterred from taking calls that would be worth more than they would cost. On the other hand, if the company charges so much per month, independent of number of calls taken, their "variable costs" are converted into a "constant charge" on the consumer and he may waste calls, taking service that is not worth to him as much as it costs the company. Insurance furnishes another interesting type of conversion. Here a cost that varies (though not in regular proportion to output) is converted into a "constant cost," with the result that accidents do not cost the individual as much as they cost society. This subject will come up again in connection with my final thesis.

While the cost of materials to a producer who uses them is a direct or variable cost, a considerable part of the original cost of the materials is likely to be an overhead or constant cost. True, there is one thing about raw materials that differentiates them from costs of labor or costs of plant, and that is that if they are not used today they can be used at some future time, and if you use them today you sacrifice that future use. Thus, in a general way, materials are properly treated as a variable cost. But the financial reckoning, at least in time of depression, distorts the amount of this cost. The financial expense at such times involves the sacrifice of a present value based on expected higher prices in the future. If it is not worth while working up the materials now, that means that this future use is outbidding the present demand for goods. True, in terms of money; but in terms of need the higher price represents the less pressing want, not the more pressing. People need goods more in time of depression than in time of prosperity, especially those who are out of work.

The question is complicated by the fact that manufactured goods will go to fill the warehouses, not directly into the hands of consumers. From this angle, the desideratum is that the replenishment of stocks should be a steady flow, and the penalty of failure is a clogging of the outlet for the goods already produced, and a shrinkage of their effectiveness in satisfying wants. Anything that makes goods move along more steadily is to be credited with a reduction of this waste.

This proposition appears to contradict the generally accepted doctrine that fluctuating prices serve a social purpose by saving goods for the times of greatest scarcity and need. This is true of famines and similar shortages, but it is emphatically not true where the time of shortage for the consumer is precisely the time of low prices, while high prices accompany prosperity and plenty. What about labor?

If has often been recognized that the special training of a professional man is a form of investment and that the reward necessary to compensate it is a kind of overhead cost. Accordingly, he frequently follows the principle of charging what the traffic will bear, distributing his overhead in much the same way as a public utility. But why confine this principle to doctors and lawyers? Common labor requires an investment and a very definite maintenance charge, and this maintenance is not vastly greater because a man goes to work than it would be if he were idle. In fact, one can say that when a laborer is out of a job somebody must either bear the full cost of his necessary maintenance or else his working powers will deteriorate, and that will be a still heavier loss. The unemployed often get along on surprisingly few cents a day, but those few cents do not represent what society is losing as a result of their being out of work. Almost any wages would be just that much to the good, and we can afford to ignore any possible "psychic cost" of working eight hours a day, rather than walking the streets. A ten-hour day may cost the laborer more in fatigue and sacrifice than an eight-hour day. Also a stop-gap job may make it harder for a man to get the kind of work he really wants and is fitted for, but if this is guarded against, and it is a question of having a job or having none, the "psychic cost" of any tolerable job is a minus quantity to a healthy individual.[4] Thus, we may say that most of the ultimate costs of labor to the laborer and to the community are constant costs and that they are translated into variable costs to the employer by our customary system of wages, in much the same way in which the constant costs of a telephone exchange are translated into a variable charge when the user pays so much per call.

From this point of view it appears to be almost a matter of accident that capital costs are regarded as constant and labor costs as variable. It is all a matter of the way the contracts are drawn, and while there

[4]Here we are using the principle laid down in the introduction to this paper, that "differential cost" depends on the alternative that is offered. It may be objected that I am comparing *work with wages* to *idleness with none* and that I have not separated, in good Benthamite fashion, the value of the wages from the cost of the work; that a man would rather rest or hunt for a lucrative job than work *for nothing* and that, if he got his wages whether he worked or not, he would rather not work. These are plausible propositions, granting their assumptions, but the assumptions are unreal, for *these alternatives are not offered.* What is offered is (1) work, with some "psychic cost" (amount undetermined), (2) idleness, with a "psychic cost" which is, on the whole and for the most people, greater, *over and above the immediate deprivation of wages and consequent physical comforts.* In neither case do we need to measure the absolute amounts, since we are cancelling them against each other, as already suggested. However, granting the full truth of these objections, they would require only an amendment, to the effect that the money equivalent of the differential psychic cost of work is far less than the laborer's necessary maintenance. This would leave untouched the main proposition, that most of the ultimate cost of labor is a residual or constant cost. No one proposes that laborers should work for nothing, nor that they should be paid the same wages whether they work or not.

is substantial reason for drawing them in the customary way, still it would be quite possible to make labor a constant cost by putting it on a salary basis, as the higher officials are now, and to make capital a variable cost by leasing it for a payment depending upon the use that is made of it. The United Shoe Machinery Company, the Dick Mimeograph Company, and others, have furnished precedents for an arrangement of this kind—not always with universal satisfaction. Royalties on patented processes are often in this form. This, then, is our fourth thesis: that the proportion of constant cost appearing in the financial accounts is optional, and can be changed by contract or by public action.

We now come to the fifth thesis: namely, that with reference to business depressions most of the costs of industry are constant; that consequently it would pay the industrial community as a whole to keep going even though the product were worth next to nothing above the value of the basic materials, and that even this minumum would be radically reduced by a correct social accounting. It goes without saying that industry as a whole does not follow out this principle. Single enterprises are often willing to ignore their overhead costs, in the effort to maintain output, but they must cover their variable costs and their variable costs include a lot of other people's overhead costs. In order to produce results by this method everybody would have to do the same thing at once, including the producer of raw materials, the retailer who has invested in a stock of goods at the old prices, and labor at every stage of production. All would have to be willing to sell their product for what it would bring, down to the actual differential cost of working, rather than standing idle. If this miracle were to happen, another miracle would follow; namely, that it would not require heavy reductions in prices to stimulate demand. Everybody, by keeping his laborers at work and in the market for goods, would be protecting the demand for everybody else's commodities; but if each acts by himself, he bears a heavy burden and receives only a minute part of the benefit. Thus it is the part of individual financial wisdom to protect one's overhead outlays and let the demand fall off.

The situation is analogous to that of separate banks trying to maintain specie payment in time of panic. If they could all jointly announce that they would pay out their reserves to depositors as long as there was any money to pay out, they would not have to pay out any dangerously large amount. However, what happened was that banks suspended specie payment to protect their reserves, whose only use was to maintain specie payment. It required a coöperative organization to make the reserves available, and it will require some means of organized action in the industrial field, at least as effective as the

federal reserve system in the banking field, before the waste of unemployment can be avoided.[5]

To sum up, financial accounting says that goods at such times are not worth what they cost. Socially speaking, this is a fallacy; a pecuniary fiction. Goods are worth producing whenever there is a waste capacity which could be used to produce them, and the utilizing of this waste capacity costs the community substantially nothing, no matter what it may cost the private employer under the customary system of wages.

Passing over the sixth thesis we come to the seventh and last. This deals with what we may call the "socializing of overhead costs," or the problem of assessing, collecting, and apportioning them in the way demanded by community efficiency rather than by customary financial contracts and accounts. It is impossible to lay down in advance just what detailed method of allotting the community burdens would best promote this end. One thing which might promote it would be a concentrating of overhead costs so that some one responsible for the conduct of industry would have something like as large a percentage of overhead costs in his budget as the community has. The only person who can play this part is the employer, and one of the lines of advance might be to convert certain indirect social costs into overhead charges on the industry. Compulsory insurance for accidents is a case in point, and has resulted not merely in lightening the suffering from accidents but in reducing the number very materially.

Costs should be apportioned on a basis of responsibility, but responsibility is a somewhat elastic term. One may be responsible for doing something to increase costs or for failing to do something to diminish them and it is sometimes hard to draw the line, especially when it becomes a question as to who is responsible for the burdens of a business depression, which is an unexpected by-product of changes in methods of production—changes which were very profitable to those who made them and are still profitable for those who follow their lead. Roughly, every business helps create the community problems of industrial unrest, congestion, and unemployment. Its exact responsibility is untraceable, but unless it does something to help lighten these burdens or to help bear them, it is not paying its full costs. In a still broader sense, we may say that one kind of responsibility is gauged by the opportunity which a person has to improve the situation by his own efforts. This opportunity is shared by everybody in the community, laborers, employers, and others; but the employer can often do the most decisive things.

So far as there are costs which are truly variable for industry as a whole, they should be laid *as variable costs* on all those who have

[5]Cf. W. W. Stewart, AMERICAN ECONOMIC REVIEW, *Sup.*, Mar. 1922, pp. 42-43.

opportunities to economize these costs. For this reason insurance is good in that it enlists the interest of the insurance company in organized efforts to reduce losses, but bad if it frees the insured from all damage and all incentive to reasonable care and caution. Therefore property insurance should generally not cover the full amount of the loss.[6] So far as there are costs which are truly constant for industry as a whole, they should be so distributed as not to form an obstacle to the fullest utilization of these constant outlays, or rather, of the productive capacities they represent. Such an obstacle is likely to result whenever constant costs are converted into variable charges in the process of shifting; hence they should be made into constant charges so far as practicable. So far as this is not practicable, the community should assume whatever burdens are necessary to promote full utilization, but without any wholesale subsidizing of private industry. Each industry is properly responsible for all its costs, including its overhead.

The kind of shifting that converts constant costs into variable appears to be, to a large extent, inevitable under private enterprise. In order to abolish it, prices for all goods would have to be made on some such principle as the "readiness to serve" system of rates for electric current, where the customer pays a lump sum to cover the constant costs, and then pays a separate charge for current, covering those costs that vary with output. This plan could hardly be followed with commodities that could easily be resold.

Labor, however, is not a commodity, and might be able to work wonders if it directed its bargaining power toward selling its services for a substantial minimum retainer plus a moderate charge proportioned to work actually done, or some sliding scale based on this principle. Then anything which any employer could do to regularize employment would yield him immediate benefits in lower unit costs of labor. The chief difficulty would be that those who need this system worst would not be strong enough to secure it; nevertheless they would still benefit from any general stabilization that might result. In this way a large amount of good might be done—vastly more than by merely trying to make the hourly wage high enough to pay for all lost time. This accepts the evil and does nothing to promote a cure. On the other hand, it would not be wise to force employers to pay salaries equivalent to the whole of labor's overhead costs, for labor's incentive to work must also be preserved. However, something in this direction would be a pertinent experiment.

The experiment might show that labor needs the fear of losing the job in order to do a fair day's work, but that is not likely. At present,

[6] This idea is developed by A. Blauvelt, "The Public Insurable Interest," *Jour. Pol. Econ.*, XXIII, 599-611 (June, 1915).

labor commonly works so much harder when a lay-off threatens that sometimes a reduced force produces an increased output. This, however, is a poor argument for the fear of the job as a stimulus tending to increase society's total output, for it shows on the face of it that *this motive does not work at the only time it has a real chance to stimulate increased output*, namely, in time of active demand. It only works when output is already limited by a reduced demand and cannot be much increased by the worker's personal efforts. Hand in hand with this goes the impulse to "nurse the job" whenever it can be done without fear of discharge, and this has a real and material effect in reducing output during active times.

The only condition under which the fear of discharge can act as a real and effective stimulus to increased production is a condition in which discharge is for poor performance only, not because of overproduction. If a system could be devised whereby the faithful worker would be sure of a minimum retainer at all times, plus a differential wage for work done, and only the shirker could be discharged, and if this system could really work as intended—a large "if"—the net result would certainly be more diligent work, not more shirking.

So far as concerns encouraging the employer to do his utmost to stabilize employment, an equivalent incentive might be put in a different form; for instance, the cost of unemployment relief might be assessed on industries in proportion to some index of their responsibility for irregular employment.[7] Broadly speaking, anything the community might do to cure the disease of the business cycle would represent a legitimate application of the theory of social overhead costs, and might gain support from the doctrine that almost any useful goods are worth what they cost to produce in times of general unemployment, in the light of correct community accounting.

All of which is a rather involved way of saying that idleness is waste and that anything idle labor can do is better than nothing. Perhaps the entire argument would be superfluous but for the fact that economics and business are both committed to judging whether goods are economically worth their cost according to the financial expense involved under existing forms of contract. Having once started to calculate costs and values after this fashion, there is nothing for it but to carry the calculation far enough to show that in the end it does not disagree with common sense.

[7] *Cf.* W. C. Mitchell, "Controlling Business Cycles," AMERICAN ECONOMIC REVIEW SUP., Mar., 1922, pp. 27-8.